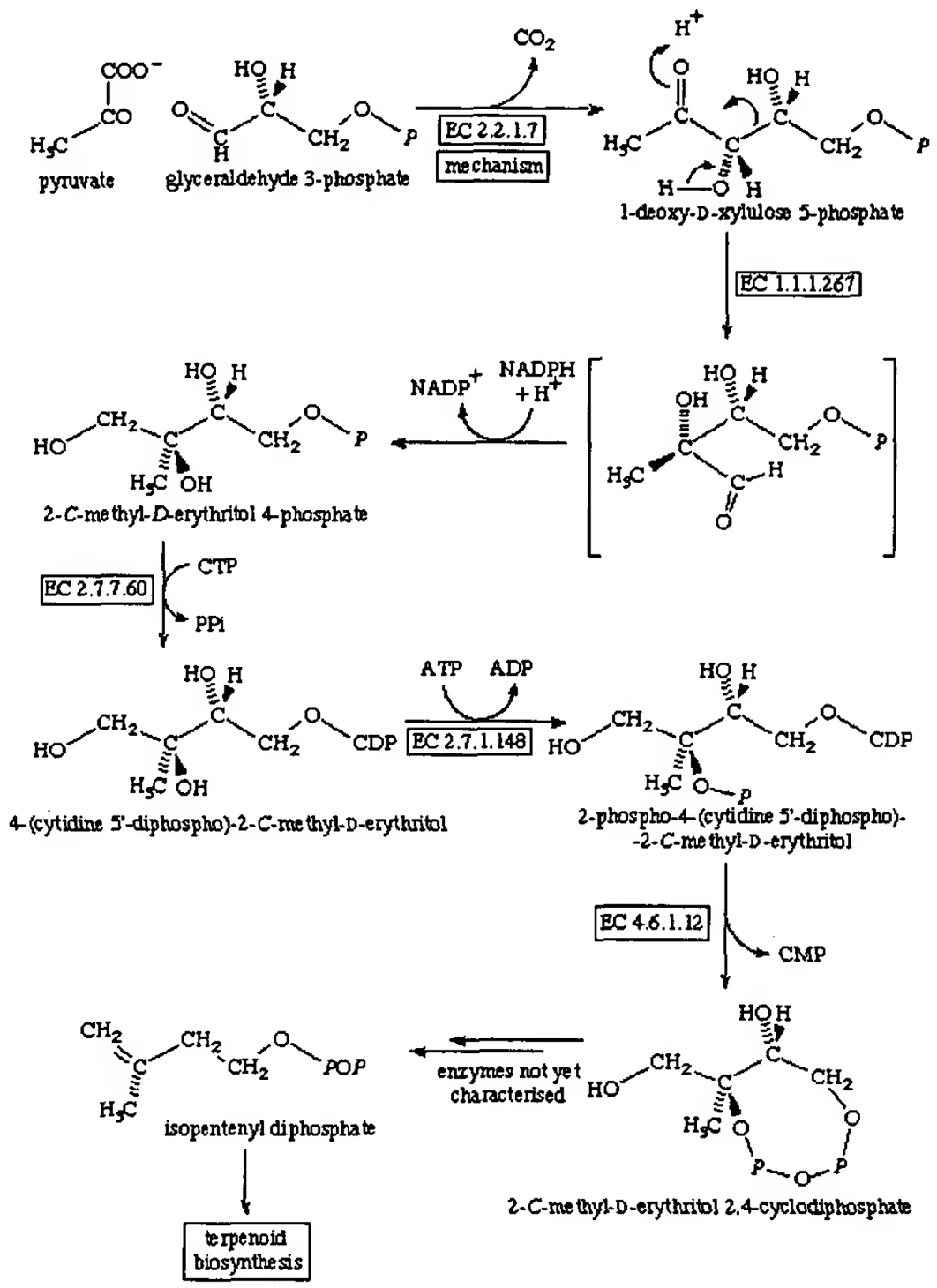
Non-Mevalonate Terpenoid biosynthesis

When cursor points to a box further details will be displayed in the status window below. If you click on the box you will change to appropriate reaction scheme or enzyme specification.



DXP Reductoisomerase

See also separate file for mechanism of EC 2.2.1.7 1-deoxy-D-xylulose 5-phosphate synthase

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isopentenyl diphosphate to terpenoid biosynthesis
EC 1.1.1.267 1-deoxy-D-xylulose-5-phosphate reductoisomerase
EC 2.2.1.7 1-deoxy-D-xylulose 5-phosphate synthase (formerly EC 4.1.3.37)
EC 2.7.1.148 4-(cytidine 5'-diphospho)-2-*C*-methyl-D-erythritol kinase
EC 2.7.7.60 2-*C*-methyl-D-erythritol 4-phosphate cytidylyltransferase
EC 4.6.1.12 2-*C*-methyl-D-erythritol 2,4-cyclodiphosphate synthase

IUBMB Enzyme Nomenclature

EC 1.1.1.267

Common name: 1-deoxy-D-xylulose-5-phosphate reductoisomerase

Reaction: 2-*C*-methyl-D-erythritol 4-phosphate + $NADP^+$ = 1-deoxy-D-xylulose 5-phosphate + NADPH + H^+

For diagram click here.

Other name(s): DXP-reductoisomerase; 1-deoxy-D-xylulose-5-phosphate isomeroreductase; 2-*C*-methyl-D-erythritol 4-phosphate (MEP) synthase

Systematic name: 2-*C*-methyl-D-erythritol-4-phosphate:$NADP^+$ oxidoreductase (isomerizing)

Comments: The enzyme requires Mn^{2+}, Co^{2+} or Mg^{2+} for activity, with the first being most effective. The enzyme from several eubacteria, including *E. coli*, forms part of an alternative nonmevalonate pathway for terpenoid biosynthesis (for diagram, click here).

Links to other databases: BRENDA, EXPASY, KEGG, WIT, CAS registry number:

References:

1. Takahashi, S., Kuzuyama, T., Watanabe, H. and Seto, H. A 1-deoxy-D-xylulose 5-phosphate reductoisomerase catalyzing the formation of 2-*C*-methyl-D-erythritol 4-phosphate in an alternative nonmevalonate pathway for terpenoid biosynthesis. *Proc. Natl. Acad. Sci. USA* 95 (1998) 9879-9884. [PMID: 9707569]

[EC 1.1.1.267 created 2001]

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WEST Search History

DATE: Tuesday, April 29, 2003

Set Name side by side	Query	Hit Count	Set Name result set
DB=USPT,PGPB; PLUR=YES; OP=ADJ			
L12	(phosphate adj3 reductoisomerase) and (inhib$ modulat$ or activat$) and @ad<20000809 not l6	5	L12
L11	L1 and (inhib$ modulat$ or activat$)	33	L11
DB=JPAB,EPAB,DWPI; PLUR=YES; OP=ADJ			
L10	L9 and @pd<20000809	8	L10
L9	L7 and (inhib$ or modulat$ or activat$)	15	L9
L8	L7 and (inhib$ modulat$ or activat$)	0	L8
L7	reductoisomerase	16	L7
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L6	L5 and @ad<20000809	9	L6
L5	L4 or l3	17	L5
L4	L1 same (modulat$ or activat$)	7	L4
L3	L1 same inhib$	14	L3
L2	L1 same inhib?	0	L2
L1	reductoisomerase	51	L1

END OF SEARCH HISTORY